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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,322	05/01/2001	Nobufumi Mori	Q64266	2257

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EXAMINER

PHAM, HAI CHI

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 07/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,322

Applicant(s)

MORI ET AL.

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claim Objections

1. Claims 19 and 20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form. Each of claims 19 and 20 recites the following limitation "the optical fixing section irradiates light onto the light and heat sensitive recording material to fix the developed image thereon" (emphasis added), which is inherently included in the parent claims 1 and 12, respectively. In fact, it is understood that by reciting "an optical fixing section, ..., which irradiates visible light for fixing the developed image" (claims 1 and 12), the visible light is directed to the light and heat sensitive recording material on which the developed image has been formed. It is proposed to integrate the content of claims 19 and 20 into their respective parent claims 1 and 12.

Appropriate correction is required.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-5, 7-9, 12-13, and 19-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5, 10-12 of U.S. Patent No. 6,499,893 B2 in view of Umehara et al. (JP 57-5044).

Claims 1-5, 11-12 of U.S. Patent No. 6,499,893 B2 recite all the claimed limitations of the current invention including:

- an optical recording section, which exposes the light and heat sensitive recording material for recording a latent image,
- a thermal developing section, located downstream of the optical recording section, which develops the latent image by heating,
- an optical fixing section, positioned downstream of the thermal developing section, which irradiates light onto the light and heat sensitive recording material for fixing the developed image,
- the optical recording section has a light source, and the light source is a laser light source, which has an intensity maximum in a wavelength range from 300 to 1,100 nm (visible light range),
- a maximum irradiation light amount at the optical recording section being from 0.01 to 50 mJ/cm²,

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- the heating temperature at the thermal developing section being from 50 to 200°C,
- the optical fixing section fixing with light having intensity so as to provide an illumination of 20,000 to 6,000,000 lux,
- the light and heat sensitive recording layer which contains thermally-responsive microcapsules, which encapsulate a substantially colorless compound that reacts with a color-forming component to form color and, outside the microcapsules, a photo-polymerizable composition, which includes at least the color-forming component, a photo-polymerizable compound and a photo-polymerization initiator.

However, Claims 1 and 12 of U.S. Patent No. 6,499,893 B2 fail to recite the fixation light being visible light and the casing section encasing a light and heat sensitive recording material.

Umehara et al. discloses an image forming apparatus comprising an exposure section (located at the conveying belt 2a) for imagewise exposing a light and heat sensitive recording material with visible light, a developing section (located at the conveying belt 2b) positioned downstream of the exposure section for developing the recording material by heating (4), and a fixing section (located at the conveying belt 2c) positioned downstream of the developing section for irradiating the recording material with visible light.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use visible light for fixation of the light and heat sensitive

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recording material as taught by Umehara et al. The motivation for doing so would have been to provide a simple and inexpensive image-forming device.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 18-19 rejected under 35 U.S.C. 103(a) as being unpatentable over Umehara et al. in view of Yamamoto (U.S. 4,920,376).

Umehara et al. discloses all the basic limitations of claims 1 and 12 except for the casing section, which encases the light and heat sensitive recording material.

However, it is well known in the art that any printer would be provided with a casing or housing of any type for storing the recording media as evidenced by Yamamoto, which discloses an image recording apparatus including a housing (11) containing the photo-sensitive recording web (20) to be supplied to the exposure unit (17), a developing unit (18), and the fixing unit (19).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the recording medium housing as taught by Yamamoto in the device of Umehara et al. The motivation for doing so would have been to provide an enclosure for the recording medium, which would shield the recording medium from light, dust, and moisture.

6. Claims 2-3, 12, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umehara et al. in view of Yamamoto and Uji-Ie et al. (U.S. 4,332,884).

Umehara et al. in view of Yamamoto discloses all the basic limitations of the claimed invention except for the exposure light having an intensity maximum in a wavelength range of 300 – 450 nm, the maximum irradiation energy of the recording light being set between 0.01 to 50 mJ/cm².

Regardless, Uji-Ie et al. discloses the use of an ultra-violet light for recording and a visible light for fixing an image formed on a light and heat sensitive recording medium, the maximum irradiation energy of the recording light being set at 0.15 mJ/cm² (see Examples 16 to 20 on column 24).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Umehara et al., as modified by Yamamoto, with the aforementioned teachings of Uji-Ie et al. for the purpose of generating the high-contrast image.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Umehara et al. in view of Yamamoto, as applied to claim 1 above, and further in view of Yamada et al. (U.S. 5,264,316).

Umehara et al. in view of Yamamoto discloses all the basic limitations of the claimed invention except for the range of variation of the heating temperature of the thermal developing section being set at most 5° C.

Regardless, it is known in the printing art that the temperature distribution in a heat-developing device should be kept less than $\pm 1^{\circ}\text{C}$ as a requirement. Yamada et al., for example, discloses a heat-developable image recording material whose temperature distribution variation would be kept within a strict requirement of $\pm 1^{\circ}\text{C}$ during the heat development of the color latent image (see Table 1).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Umehara et al., as modified Yamamoto, with the temperature distribution variation limitation as taught by Yamada et al. for the purpose of providing a sharp color image.

8. Claims 4, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umehara et al. in view of Yamamoto, as applied to claim 1 above, and further in view of Kubo et al. (U.S. 6,303,259 B1).

Umehara et al. in view of Yamamoto discloses all the basic limitations of the claimed invention except for the composition of the light and heat sensitive recording layer.

However, Kubo et al. discloses a method of recording an image on a heat and light-sensitive recording material, which includes providing visible light of three waves having different wavelengths for imagewise exposing the heat and light-sensitive recording material to form a latent image, heat developing the latent image, and an UV light to fix the developed image (col. 3, lines 36-59), the recording process being performed in the above specified sequences. Kubo et al. further teaches the recording

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light having an intensity maximum at wavelength selected from a wavelength range of 300 and 1100 nm (RGB light), the thermal developing temperature being of 50 to 200°C (col. 3, lines 60-64). Kubo et al. also discloses the heat and light-sensitive recording material having layer comprising color-forming component or dye-precursor being either enclosed in the core of the microcapsules or disposed in the shell of the microcapsules and a photo-polymerization composition or developer being again disposed outside of the microcapsules or enclosed in the microcapsules such that they are capable of reacting to each other to form color, the photo-polymerization composition further containing a photo-polymerization initiator (5) and a polymerizing substance (6). With regard to claims 10, 11, Kubo et al. teaches the heat and light-sensitive recording material being provided with a photo-curable heat and light-sensitive recording layer having a dye-forming coupler such as phenolic compounds capable of coupling with the oxydant (diazonium salts) to form a dye, such that light irradiation cures an irradiated portion of the heat and light-sensitive recording layer.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Umehara with the aforementioned teachings of Kubo et al. for the purpose of accelerating the development reaction of the recording material compounds under the exposure of proper light.

9. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umehara et al. in view of Yamamoto and Uji-ie et al., as applied to claim 12 above, and further in view of Okino (U.S. 4,958,233).

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Umehara et al. in view of Yamamoto and Uji-ie et al. discloses all the basic limitations of the claimed invention except for the type of laser sources.

Okino, an acknowledged prior art, discloses an image recording apparatus comprising a casing section (photosensitive material magazine 14), which encases a light and heat sensitive recording material (light-sensitive and heat-developable material S), an optical recording section (digital exposure unit 200), downstream of the casing section (see Fig. 1), which exposes the light and heat sensitive recording material to visible light (RGB lights), which has been fed from the casing section, for recording a latent image, a thermal developing section (thermal developing unit 40), downstream of the optical recording section, which develops the latent image by heating (using curved heating board 43), and an optical fixing section (image fixing unit 106), downstream of the thermal developing section, which irradiates UV light for fixing the developed image. Okino further teaches the light source being a semiconductor laser, and using different light sources of different wavelengths, all of semiconductor lasers.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Umehara et al. with the aforementioned teachings of Okino. The motivation for doing so would have been to provide a sharp coherent light sources to expose the light and heat sensitive recording material.

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10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Umehara et al. in view of Yamamoto, as applied to claim 1 above, and further in view of Kagayama et al. (U.S. 5,038,710).

Umehara et al., as modified by Yamamoto, discloses all the basic limitations of the claimed invention except for the cutter.

Kagayama et al. discloses an image forming apparatus in which the support member (8) is cut into a sheet of predetermined length after the heat fixing process (col. 4, lines 52-56).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a cutter as taught by Kagayama et al. in the modified device of Umehara et al. The motivation for doing so would have been to provide the final reproduced image on a sheet of medium of a desired size.

Response to Arguments

11. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new grounds of rejection presented in this Office action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER

July 8, 2003